REMARKS/ARGUMENT

Claims 26 and 29-50 remain pending in the patent application. Claims 26, 29, 31, 33-34, 39-44, and 47 have been amended. Claims 27 and 28 have been canceled without prejudice or disclaimer. Claims 51 through 56 are new.

I. Claim Objections

Claims 29, 34, and 39 have been objected to based on a number of minor informalities. Claim 29 has been objected to on the basis that the term "variable" should be replaced by "variables." Applicants have accordingly amended claim 29 to include the term "variables."

Claim 34 has been objected to for inadvertently omitting the term "the" in the limitation "generated in motion control flowchart," as indicated on line 2 of claim 34. The Office Action also stated that the term "the" should be replaced with "into" in the limitation "subprograms of the textual language the graphical elements," indicated on line 3 of claim 34. Applicants have appropriately amended claim 34.

Claim 39 has been objected to on the basis of a typographical error, where the term "an" in the limitation "parallel branch is initiated an wherein," indicated on lines 1 and 2 of claim 39, should in fact be replaced by the term "and." Applicants have accordingly amended claim 39 by replacing "an" with the term "and."

Claims 29, 34, and 39 have been amended for the purpose of complying with the objections outlined in the Office Action. These amendments have not been made for reasons of patentability. No new matter has been added.

II. Rejection Under 35 U.S.C. § 112

Claims 27-31, 33, 36, 37, 40-44, 47-49 have been rejected under 35 U.S.C. § 112, second paragraph.

Claims 27 and 28 have been canceled.

Claim 29 now depends from claim 26, which is believed to comply with 35 U.S.C. § 112, second paragraph and is submitted to be allowable.

Claim 30 is dependent from claim 29 and is similarly submitted to be allowable.

Claim 31 has been rejected based on an insufficient antecedent basis for the limitation "the controller." In addressing the basis for this rejection, the limitation "a controller" has been substituted for the limitation "the controller." Claim 31 is therefore allowable.

Claim 33 has also been rejected based on an insufficient antecedent for the limitation "the controller." Accordingly, claim 33 has now been amended to delete "the controller" and substitute "a controller." Claim 33 is therefore allowable based on this amendment.

Claim 36 has been rejected based on an insufficient antecedent for the limitation "the structured text language," and has now been amended to substitute "a structured text language" for "the structured text language." Based on this amendment, claim 36 is now allowable.

Claim 40 has been rejected on the basis of insufficient antecedent for the limitation "function blocks." Claim 40 has now been amended to address the insufficient antecedent basis by deleting "function blocks" and substituting "further comprising function blocks. On the basis of this amendment, claim 40 is now allowable.

Claims 41-43 have been rejected on an insufficient antecedent basis for the limitation "the motion control flowchart view." Applicants have accordingly amended this limitation to "a display associated with the motion control flowchart," for which there is a correct antecedent basis. Claim 43 has also been rejected for insufficient antecedent basis for the limitation "the function blocks for the allocation of variables." Claim 43 directly depends from claim 41, which has been amended to delete "wherein function blocks are combined" and substitute "further comprising function blocks, wherein the function blocks are combined" Claim 41 now is believed to have correct antecedent basis for the term "function blocks." Therefore, claims 41-43, as amended, are submitted to be in condition for allowance.

Claim 44 has been rejected based on an insufficient antecedent basis for the limitation "the flow chart view." In claim 44, the limitation "the flow chart view" has been amended to "the display associated with the flowchart," which has a sufficient antecedent basis to claim 41. Claim 41, as earlier amended, recites the limitation "a display associated with the motion control flowchart." Hence, claim 44, as amended, has sufficient antecedent basis, and is, therefore, allowable.

Claim 47 has been rejected due to the limitation "reduced form and on or enlarged form" allegedly being unclear. Claim 47 has now been amended to delete "reduced form and on or

enlarged form" and substitute "a reduced form and an enlarged form." Claim 47 is, therefore, now clear, and in condition for allowance.

Claim 49 has been rejected on the grounds that the term "collective step" is allegedly unclear. Applicants respectfully disagree. The term "collective step" is clear to those skilled in the art of industrial software and is amply described in the specification. As discussed, triggering in a "collective step" means that the actual debugging process does not have to be initiated by the user in a separate operation after preparation and assignment of the suspend commands to the graphical elements. Application at 10, paragraph [0039].

No new matter been added. The amendment has not been made for patentability reasons.

III. Priority Claim Under 35 USC § 119

The present application claims priority benefit under 35 USC § 119 to German patent applications 10038441.2, 10038440.4, and 10038439.0, all filed August 7, 2000. Applicants have submitted certified copies of the priority documents on May 19 of this year.

Applicants respectfully request that formal acknowledgment of this claim and that benefit of this priority claim be accorded and made of record.

IV. Rejection Under 35 U.S.C. § 102(e)

Claims 26-28, 32, 38, 41, 43, and 50 stand rejected as anticipated by U.S. 6,412,106 to Leask et al. (hereinafter Leask). A rejection on the basis of anticipation requires each and every element of the claim, properly construed, to be identically disclosed by the single, cited reference. Applicants respectfully submit that the Leask patent fails to show each and every limitation of the claim, both prior to and following the present amendment.

By way of overview, the claims are all directed to methods for debugging programs for industrial controllers. Industrial software is a specialized field, with particularized problems not understood or addressed by workers in other fields. The problems identified and addressed by the present invention, such as those involving engineering versus run-time systems, are not addressed by Leask. Leask is not analogous art and, as discussed at length below, neither discloses nor suggests the claimed methods.

i. Claim 26

Claim 26, as amended, is directed to a method of debugging programs in industrial controllers, where graphical elements are linked using an editor in order to form a graphical flowchart. The method comprises preparing a debugging process based on the graphical flowchart and assigning a suspend command to each graphical element. The debugging process then commences and continues until a suspend command is reached. Once the suspend command has been reached, the location of the flowchart element corresponding to the suspend commend is displayed. The process then proceeds until the next suspend command is reached. Further, a task corresponding to a graphical element of the flowchart, that has been suspended by a suspend command, is continued by a task control mechanism of the run-time system.

This amendment is supported by the specification at paragraph 15 and incorporates the limitation of claim 27. As described in that portion of the specification, and as now called out in the claim, the task control mechanism can be continued by a task control mechanism of the run time system. This feature permits regression testing, for example.

Leask does not disclose or suggest this additional feature, or the advantages it enables. Nowhere does Leask identify a control mechanism of a run time system having to do with continuing of a tasks that has been stopped by a suspend commands. The portion of Leask relied upon in support of the rejection of claim 27, namely Figure 5, item 412 and the accompanying text, does not disclose or suggest a task control mechanism of a run time system. Rather, the applied portions of Leask merely relate to a graphical debugging environment at an application program level.

Leask, moreover, does not teach or suggest assigning a suspend command to each graphical element of the programming flowchart, as recited in claim 26 prior to the present amendment. The passage relied upon in support of this proposition, column 7, lines 29-33 merely states that breakpoints may be set. Leask does not teach or suggest assigning a suspend command to each graphical element.

Because Leask does not describe or suggest a run time system, it cannot anticipate claim 26, which is therefore respectfully submitted to be allowable.

ii. Claim 32

Claim 32, directly dependent from claim 26, is submitted to be allowable for the same reasons.

Moreover, claim 32, as amended, recites a debugging interface available to a user at levels comprising at least two of the group consisting of the structured textual language level, the pseudo-code level, and the processor code level.

Leask neither discloses nor suggest such features. Claim 32, for these reasons, is submitted to be allowable.

iii. Claim 38

Claim 38 also directly depends from allowable claim 26 and is submitted to be allowable on the same grounds. Claim 38 is directed to a programming language command present in a motion control flowchart view, where the programming language command consists of a loop and a parallel branch. As recited in the Office Action, Figure 3, item 34, of Leask allegedly describes a graphical development environment presented to a developer when designing a call flow. Nowhere does Leask's graphical development environment describe or suggest a motion control flowchart view, much less, providing associated commands that relate to the motion control flowchart view.

iv. Claim 41

Claim 41 directly depends from claim 26 and is submitted to be allowable on the same grounds. Claim 41 is, moreover, directed to function blocks, wherein the function blocks are combined into modules that in turn are presented as function blocks in a display associated with the motion control flowchart. Leask, including col. 11, lines 60-67, and col. 12, lines 1-5 relied on in support of the present rejection, fails to describe or suggest function blocks, much less function blocks that are associated with a flowchart display. In the field of industrial control "function block" is a term of art. Since Leask has nothing to do with industrial controllers, this term of art is not contemplated by Leask.

For these reasons, claim 41 recites patentable subject matter and should be allowed.

vi. Claim 43

Claim 43 directly depends from claim 41 and is submitted to be allowable for the same reasons. Moreover, claim 43 is directed to function blocks, wherein the function blocks for the allocation of variables in the display associated with the motion control flowchart comprise multiple instructions. As recited in the Office Action, col. 11, lines 60-63, of Leask allegedly purports that each displayed icon represents underlying textual source code for carrying out a function. Neither the recited passage, nor any aspect of the Leask reference discloses or suggests "function blocks," much less function blocks comprising multiple instructions.

For these reason, claim 22 is directed to patentable subject matter, and is, therefore, submitted to be allowable.

vii. Claim 50

Claim 50 directly depends from claim 26 and is submitted to be allowable on the same grounds. Moreover, claim 50 is directed to displaying a currently processed graphical element of the flowchart program during the processing of the flowchart program. Col. 16, lines 25-29 of Leask, as recited in the Office Action, allegedly describes highlighting each icon of a program as the develop steps thorough each icon. Applicants' graphical elements are displayed during processing without the additional need for a developer to step through the program. Claim 50 is thus allowable.

V. Rejection Under 35 U.S.C. § 103(a)

Claims 29-31, 36, 37, 45, and 47 have been rejected as allegedly unpatentable over Leask in view of "ISaGRAF Overview" by AlterSys Inc., March 2001 (hereinafter AlterSys). Applicants respectfully submit that these rejections are traversed on the basis of the following arguments.

A rejection under 35 U.S.C. § 103(a) requires the establishment of a *prima facie* case that the claimed subject matter, including all claim elements, would have been obvious to a person having ordinary skill in the art on the basis of either a single prior art reference or more than one reference properly combined. As no such *prima facie* case has been established for these claims, Applicants respectfully traverse these rejections, as set forth more fully below.

As discussed above, Leask is not analogous art.

In addition, the claims of the present application are entitled to their German priority date, which has been acknowledged on the corrected filing receipt as August 7, 2000. Applicant has pointed out above that the certified priority documents have been submitted and have requested formal acknowledgment of entitlement to the benefit of the German priority dates.

On the basis of this entitlement, the AlterSys ISaGRAF document, dated March 3, 2001, is not available as a reference against the pending claims. For this reason, all rejections made in part over this reference should be withdrawn.

In addition, it is submitted that the combination of Leask and the AlterSys reference is improper and could not be made without the benefit of hindsight based on applicants' invention.

The rejections of claims 29-31, 36, 37, 45, and 47 is submitted to be improper for the additional reasons set forth below.

i. Claim 29

Claim 29 depends indirectly, as amended, from claim 26 and is submitted to be allowable on the same grounds.

Furthermore, claim 29 is directed to a task control mechanism of the run time system comprising breakpoint debugging and variables that can be pre-assigned by the user in the engineering system. The task control mechanism also further comprises pre-assigning variables to the breakpoints.

Leask neither discloses nor suggests a run time system, much less a task control system of a run time system. As described above, Leask is not analogous art and has nothing to do with industrial control or its various concepts, such as are recited in the pending claims. Nor does the AlterSys reference describe or suggest a task control mechanism of the run time system.

As both references fail to disclose "a task control mechanism of the run time system," applicants respectfully submit that no *prima facie* case of obviousness has been made out and that claim 29 is allowable over the art of record.

ii. Claim 30

Claim 30 depends directly from claim 29 and is submitted to be allowable for the same reasons.

Claim 30 is directed to variable pre-assignments in the task control mechanism, where the variable pre-assignments are performed by programs of the run time system other than the task control mechanism. Applicants respectfully submit that neither of the cited references describe nor suggest all of the limitations of the claim including variable pre-assignments in the task control mechanism. The PTO contends that the AlterSys reference teaches that "debugging is done by means of debugging tools." This, however, is not what is being claimed. The claim specifically calls out that variable pre-assignments are performed by programs of the run time system. The AlterSys reference, which at any rate is not available as prior art, in no way discloses or suggests these limitations.

Applicants respectfully submit that for the foregoing reasons, no *prima facie* case of obviousness has been made out. Claim 30 recites allowable subject matter.

iii. Claim 31

Claim 31 depends directly from claim 26 and is submitted to be allowable for the same reasons.

Moreover, claim 31 further recites generating a structured textual language from the flowchart, and converting the structured textual language into a processor-independent pseudo-code. The processor-independent pseudo-code is then loaded into a controller and converted into executable processor code.

The AlterSys reference does not describe or suggest generating different levels of code from a higher level of abstraction. For example, page 6, lines 6-12, of the AlterSys reference expresses an automation engineer's preference for Structured Text (ST) for complex procedures, rather than graphical languages. This recited passage of AlterSys does not in any way describe or suggest generating another code level from Structured Text (ST), or converting a code level to Structured Text (ST). Similarly, page 13, lines 15 and 17, of the AlterSys reference also fails to describe or suggest the conversion of code to another lower level of abstraction. It merely refers to generating a particular code without even attempting to describe how and from what the code was generated. Moreover, the reference is referring to re-compiling and linking C code files in order to obtain executable files. In AlterSys, there is no suggestion or motivation for converting between flowchart, structured text, pseudo-code, and executable processor code, as claimed by

applicants. Therefore, applicants respectfully submit that since no *prima facie* case of obviousness has been made, claim 31 is independently patentable over the art of record.

iv. Claim 36

Claim 36 depends directly from claim 26 and is submitted to be allowable on this basis. As Leask fails to describe or suggest applicants' method of claim 26, it would not have been obvious to incorporate the structured text language according to IEC 6-1131 in the debugging process of claim 26. For these reasons, because the AlterSys reference is not available as prior art, and because the putative combination of references is improper, claim 36 is submitted to be allowable.

v. Claim 37

Claim 37 depends directly from claim 36 and is submitted to be allowable on the same grounds. Claim 37 is directed to providing a user with an opportunity to switch between structured textual language, contact plan, and function plan as a form of representing formulation conditions. Even assuming the AlterSys reference were available as prior art and could be properly combined with Leask – which it cannot – page 4, Figure 1, of AlterSys fails to describe or suggest such a form of representing formulation conditions. Rather, Figure 1 allegedly describes dividing the process cycle into well-defined steps, expressly for a Sequential Function Chart (SFC). There is no description or suggestion or switching between structured textual language, contact plan, or function plan. Applicants respectfully submit that no *prima facie* case of obviousness has been made out and that claim 37 is accordingly allowable over the art of record.

vi. Claim 45

Claim 45 depends from allowable claim 26 and is allowable for the same reasons. Claim 45, moreover, recites graphical elements of the flowchart that are positioned automatically. Page 4, lines 11-12, of the AlterSys reference, relied on in support of the rejection, does not disclose or suggest positioning flow chart elements automatically. Rather, it merely refers to automatically rearranging the chart itself to provide a so-called clean display. Rearranging the actual chart for display purposes is ***not*** equivalent to automatically positioning the graphical

elements of a flowchart. Application, paragraph 35. For this further reason, no *prima facie* case of obviousness has been made out. Claim 45 is, therefore, submitted to allowable.

VI. Rejection Under 35 U.S.C. § 103(a)

Claim 33 has been rejected as being unpatentable over Leask, in view of U.S. 5,563,526 to Hastings (hereinafter Hastings). Applicants respectfully submit that this rejection is traversed on the basis of the following arguments.

Claim 33

Claim 33 depends directly from claim 26 and is submitted to be allowable for the same reasons. In addition, claim 33 recites the provision of programming language commands in the flowchart editor that are a function of "configuration of hardware" associated with the industrial controller. Hastings, as described in the Office Action, allegedly describes a general purpose programmable electrical chip that is said to be capable of being programmed to perform both analog and digital circuit functionalities. A set of software tools including an editor are used to configure the chip, which may for example comprise a field programmable device.

The combination of Leask and Hastings is improper. No motivation has been provided as to why a person skilled in the art of industrial control software would look to the integrated circuit field without some definite suggestion in the art to do so. Even if Hastings disclosed something of relevance for the present claim, which it does not, one would need to apply impermissible hindsight to pick and choose among the teachings of the references to arrive at the claimed invention.

At any rate, Hastings does not disclose or suggest providing programming language commands in the flowchart editor as a function of configuration of hardware associated with an industrial controller.

For the various foregoing reasons, no *prima facie* case of obviousness has been made out. Claim 33 is therefore submitted to be separately patentable and is, therefore, allowable.

VII. Rejection Under 35 U.S.C. § 103(a)

Claims 34, 35, 46, and 48 have been rejected as being unpatentable over Leask, in view of "Siemens Industrial Software" by E&M Products., April 2001 (hereinafter Siemens reference). Applicants respectfully submit that these rejections are traversed on the basis of the following arguments.

As described above in connection with the AlterSys reference, the claims of the present application are entitled to a priority date of August 7, 2000. The Siemens reference is therefore not available as a prior art reference.

Moreover, the present application is commonly owned with the subject matter of the Siemens reference, eliminating it as a reference under 35 USC § 103(c). The subject matter of the claims of the present application were clearly invented before the April 2001 date of the Siemens reference; but if the PTO were to impermissibly deny applicants' their priority benefit, the reference would nevertheless be unavailable as against the application under this statute.

The combination of Leask and the Siemens reference is also improper, involving differing unrelated fields and lacking any motivation in the absence of impermissible hindsight.

The rejections are unfounded for various additional reasons.

i. Claim 34

Claim 34 depends directly from claim 26 and is allowable for the same reasons.

In addition, claim 34 recites the generation of additional graphical elements in the motion control flowchart representation by converting user-defined structured text subprograms of the textual language into graphical elements. The graphical elements comprise function interfaces of the corresponding structured text subprograms. The Siemens reference does not describe or suggest converting user-defined structured text subprograms into graphical elements. Moreover, this reference does not describe or suggest graphical elements that comprise function interfaces that correspond to the structured text subprograms. The text at page 6, lines 6-13, of the Siemens reference merely suggests programming flow chart elements using structured text (ST), without referring in any way to a conversion step into graphical elements, or the existence of function interfaces that are associated with generated graphical elements. Application, paragraph 23. Applicants respectfully submit that no *prima facie* case of obviousness has been made out and that claim 34 is allowable over the art of record.

ii. Claim 35

Claim 35 depends directly from claim 34 and is similarly allowable.

Claim 35 also recites the generation of graphical elements that are used as language elements of the motion control flowchart. Neither Leask nor the Siemens reference, whether alone or in combination, describes or suggests graphical elements that are generated from user-defined structured text subprograms, much less generated graphical elements that are used as language elements of the motion control flowchart. Claim 35 is therefore submitted to be allowable.

iii. Claim 46

Claim 46 depends directly from allowable claim 26 and is submitted to be allowable for the same reasons.

Furthermore, claim 46 is separately patentable on the grounds that it recites graphical elements of a flowchart that are automatically linked together. The Siemens reference neither discloses nor suggests such automatic linking of flowchart elements. Rather, the reference merely refers to automatic flowchart generation for certain languages such as Visual Basic, and does not in any way attempt to describe or suggest the "linking" of graphical elements. As indicated in the Office Action, Leask does not teach that graphical elements are linked together automatically. Therefore, neither Leask nor the Siemens reference describe or suggest the patentable features of claim 46. Since no *prima facie* case of obviousness has been made out, applicants submit that claim 46 is allowable over the art of record.

iv. Claim 48

Claim 48 is submitted to allowable as dependent from claim 31.

Moreover, claim 48 is directed to re-translation back into motion control flowchart representation by means of marks in the textual language. The cited references, whether alone or in combination, neither disclose nor suggest the invention as claimed. Page 6, lines 6-13, of the Siemens reference does not in anyway describe or suggest such re-translation using marks in the textual language. As previously described, the Siemens reference merely refers to automatic flowchart generation for certain languages such as Visual Basic, and does disclose or suggest re-

translation back into motion control flowchart representation, as recited in claim 48. Claim 48 is therefore submitted to be allowable over the art of record.

VIII. Rejection Under 35 U.S.C. § 103(a)

Claim 39 has been rejected as being unpatentable over Leask, in view of U.S. 6,412,106 to Sara (hereinafter Sara).

Claim 40 has been rejected as being unpatentable over Leask, in view of U.S. 6,295,606 to Messerges et al. (hereinafter Messerges).

Claim 42 has been rejected as being unpatentable over Leask, in view of "PL Copen: Standardization in Industrial Control Programming" by Eelco van der Wal, October 1999 (hereinafter Van der Wal).

Also, claim 44 has been rejected as being unpatentable over Leask, in view of U.S. 4,682,278 to Marquardt et al. (hereinafter Marquardt).

Applicants respectfully submit that these rejections are traversed on the basis of the following arguments.

i. Claim 39

Claim 39 depends from claim 38 and, is, therefore, submitted to be allowable on the same grounds. Moreover, claim 39 is directed to initiating a parallel branch, wherein individual commands are initiated within a given interpolator cycle within a respective parallel branch.

To begin with, the combination of Leask and Sara is improper. They are not analogous art – Sara has to do with digital color television reproduction – and one of ordinary skill in the field of industrial software could not conceivably have alighted upon this reference, or Leask, or the combination of the particular features that are recited, without the benefit of impermissible hindsight. Even if combined, improperly, the combination neither discloses nor suggests the all of the limitations of the claimed invention.

Sara does not disclose the limitations the PTO relies on for the rejection. Col. 2, lines 45-53, of Sara neither discloses nor suggests a programming language command of a motion control flowchart, much less initiating a parallel branch within the such a flowchart. As indicated in the Office Action, Leask admittedly does not teach a parallel branch, wherein individual commands are initiated within a given interpolator cycle within a respective parallel branch. For the various

foregoing reasons, no *prima facie* case of obviousness has been made out. Claim 39 is therefore is submitted to be separately patentable over the art of record.

ii. Claim 40

Claim 40 depends from allowable claim 26 and is submitted to be similarly allowable. Claim 40, in addition, recites the setting of parameters for function blocks by mask input in the display associated with the motion control flowchart.

To begin with, the combination of Leask and Messerges is improper. As with Sara, they are not analogous art. Messerges relates to cryptography and, more particularly, to leakage attacks on microelectronic assemblies. One of ordinary skill in the field of industrial software could not have been expected to look to this field to identify solutions in his or her own field, nor would he or she look to Leask. No motivation has been identified as to why, or how, one would combine Leask and Messerges, or how one would pick and choose among their disclosures without relying, impermissibly, on Applicants' disclosure. Even if combined, improperly, the combination neither discloses nor suggests the all of the limitations of the claimed invention.

The passage of Messerges relied upon to support the rejection, col. 2, lines 64-67, fails to describe or suggest function blocks, much less setting parameters for the function blocks by mask input in the display associated with the motion control flowchart. For the various foregoing reasons, no *prima facie* case of obviousness has been made out. Claim 40 is, therefore, allowable.

iii. Claim 42

Claim 42 is dependent from claim 41 and is submitted to be allowable for the same reasons. Moreover, claim 42 recites modules that are interleaved in the display associated with the motion control flowchart. The passage from the Van der Wal reference relied upon in support of the rejection, page 33, does not describe or suggest combining function blocks into modules, much less interleaving these modules display associated with the motion control flowchart. Page 33 of Van der Wal merely refers to parallel sequences in a sequential function chart. Moreover, the combination of Leask and Van der Wal is improper. They are from differing fields and there is no motivation to combine them, or to pick and choose among their disclosures to arrive at the claimed invention in the absence of Applicants' teachings. Even

when combined, the references neither disclose nor suggest the claimed invention. Claim 42 is, therefore, submitted to be allowable over the art of record.

iv. Claim 44

Claim 44 is dependent from allowable claim 41 and is submitted to be allowable for the same reasons.

The rejection over the combination of Leask and Marquardt, moreover, is misplaced. These references cannot be properly combined. Marquardt is from a non-analogous field, the field of turn-off thyristors. No motivation has been identified, nor is any available in the art, for combining Leask and Marquardt, or for picking and choosing among their disclosures in the absence of hindsight. The combination, though improper, would neither disclose nor suggest the claimed invention.

Moreover, the present invention was commonly owned with the Marquardt reference at the time it was made. The reference is therefore precluded, under 35 U.S.C. § 103 (a) from being applied as a reference against this application.

Claim 44 is directed to function blocks that represent functions that require a given period of time, which comprise advance conditions in the display associated with the flowchart. Marquardts fail to describe or suggest function blocks, much less function blocks that represent functions that require a given period of time comprise advance conditions in the flowchart display. Marquardt refers to a pulse generation device such as a monostable, where an input trigger signal generates a predetermined output pulse from the device. Since Marquardt and Leask, whether alone or in combination, fail to describe or suggest all of the features of claim 44, they also fail to establish a *prima facie* case of obviousness. On these additional grounds, claim 44 is submitted to be allowable.

IX. New Claims

a. Claims 52-54

This claim is similar to claim 1 prior to the present amendment, but further recites provides debugging on different code levels based on the motion control flow chart.

Although Leask allegedly proposes a graphical debugging environment, Leask does not describe or suggest debugging on ***different code levels*** based on the motion control flow chart. At best, Leask purports to a general computer program debugging technique based on flowchart graphical methods. Leask does not provide a user with the option of debugging on different code levels, because Leask does not even attempt to provide debugging within the field of industrial controllers. Rather, Leask allegedly describes a call flow diagram for processing calls.

Moreover, Leask teaches away from debugging on different code levels, as indicated by col. 7, lines 44-51, where Leask states:

> "... a system and method for debugging computer programs graphically are provided wherein a developer is **not** required to interact with the textual source code of an application program in order to debug it."

Therefore, Leask does disclose or suggest debugging at different abstraction levels based on the flowchart program. Leask is limited to merely debugging at the graphical level of abstraction, and is completely oblivious to providing a user with the option of debugging at a suitable level of abstraction according to the user's training or experience. Also, certain types of errors occur more or less frequently at different code levels. Therefore, as some errors are typical of a respective code level, trouble shooting and error localization is made more efficient by selecting a suitable code level for debugging. Application at paragraph 50.

For these reasons, Leask fails to describe each and every limitation recited in claim 52, and, therefore, claims 52-54are submitted to patentable over the art of record.

b. Claims 55 and 56

Claim 55 is directed to a method for debugging a program for an industrial controller having a plurality of code levels associated with at least one of an engineering system and a run time system associated with the industrial controller. Graphical elements are linked using an

editor to form a motion control flowchart that can be visualized on a display. The method comprises the steps of preparing a debugging process for programming code associated with the flowchart, conducting debugging for the debugging processes, and displaying the debugging process at a plurality of levels.

Claim 56 depends from claim 55 and specifies with greater detail the nature of the levels at which the debugging processes

These features are neither disclosed nor suggested by the art. Allowance of these claims is therefore respectfully requested.

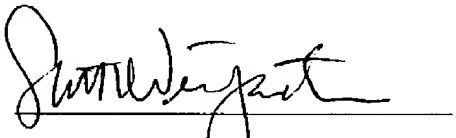
CONCLUSION

Upon entry of this Amendment, claims 26-56 are pending in the application. Applicants submit that the claims, for the reasons set forth above, are in condition for allowance. Reconsideration and allowance are therefore respectfully requested.

If a fee is required, the Commissioner is authorized to charge the fee to Deposit Account No. 23-1703.

Dated: June 2, 2004

Respectfully submitted,



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